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Exposure of valenced fake news frames to country brand equity and the role of news credibility in this process

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Abstract. *The stronger capacity of falsehood to diffuse in comparison with the truth pushes researchers to identify fake news effects on the formation of country brand equity due to the distant and intangible nature of this notion. To explore this exposure, valenced framing theory is applied as a suitable framework where credibility and cognitive image are checked to be mediators in this relationship. This study adopted a perceived and projected image approach for online survey design, and a quantitative method was applied. The results depict that fake news frames have an indirect effect on a country's brand equity mediated by news credibility and cognitive image toward the country. We show that news credibility and cognitive image function as sequential mediators, meaning that the level of believability and cognitive preconceptions about a certain country directly affect country brand equity. Moreover, this study demonstrates that negatively framed fake news can affect all dimensions of country brand*

equity negatively, whereas positive fake news frames do not change people's perceptions significantly. According to the outcomes, we proved that the level of credibility is significantly influenced by the type of valenced fake news frame as well. We discuss the implications of the findings and future research directions in the field of fake news and country brands.

Keywords: news credibility; valenced frames; fake news; country brand equity; frame effect; cognitive image; China.

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Introduction

As digital technologies continue to evolve and news spreads rapidly online, concerns about the impact of media on a country's brand are becoming increasingly significant. Any news, whether genuine or fake, can spread like wildfire and go viral very quickly. (Austin & Dong., 1994; Bessi, 2017; Popat et al., 2017). The power of fake news spreading online is in the process of being investigated deeply by scientists who discovered the stronger capacity of falsehood to diffuse in comparison with truth (Vosoughi et al., 2018) due to the degree of novelty and emotional reaction of recipients as a driving force (Ekman, 1992).

Since ordinary people tend to assess foreign countries using frames developed with news coverage (Brewer et al., 2003; Mercille, 2005), and foreign nations are often depicted in a more negative light (Blain et al., 1993; Wanta et al., 2004), the media's framing of a particular aspect of a nation can affect the country's brand because it is distant and intangible. Therefore, to identify the fake news effects on the formation of country brand equity, valenced framing theory would ensure a suitable framework. Applying the framing approach to fake news, the concept has been adopted from the journalism area where valenced media frames arouse contradictory estimations by readers about a certain issue or subject reflecting the nature of thoughts or opinions people tend to express concerning foreign country brands (love vs. hate; favor vs. disfavor).

Some studies (Han & Wang, 2012; Han & Wang, 2015) have already proven the modification of people's perception of product country image to some extent by valence frames. However, no prior literature has tested the impact of fake news on country brand equity from the perspective of valence framing in strategic communication or image management and the role of credibility in this process.

Thus, the main research question in this study focuses on the impact of valenced fake news frames on the dimensions of country brand equity. To elucidate this inquiry, the scrutiny examines various factors that play a mediating role in attenuating or exacerbating the exposure to such frames. Specifically, the study investigates the role of credibility in amplifying or mitigating the effects of valenced fake news frames on country brand equity. Additionally, the study also delves into the role of cognitive image of the individual in shaping the perception of country brand equity and in propagating the impact of valenced fake news frames on this construct.

This research intends to fill the void by elaborating on the mechanism of framing effects over this process. It pioneers in empirically investigating this theory in the country brand literature, as according to previous studies, the influence of valenced news frames is significant in the formation of the overall national image (Gang et al., 2015). The novelty of this research encompasses the connection of valenced news theory applied in fake news and country brand equity in this study, which aims to estimate the extent of tarnishing country brands and clarify various features of this impact in the case of positive or negative frames.

Literature review

Due to globalization and blurred borders, building a strong country brand is extremely important for national governments (Gilboa, 2008). Thus, various studies have proven positive exposure of a country brand on financial benefits (Kang & Yang, 2010), travel to (Peffley & Hurwitz., 1992; Ospina Estupinan, 2017; Zhou et al., 2023: Manhas et al., 2021; Farkas et al., 2023), investment in (Anholt, 2007, p. 13), sustainability (Alreahi et al., 2023), or starting a business in that country (Wang, 2006; Ogutu et al., 2023), as well as to form mass attitudes about foreign policy (Manheim, 1994).

The perception of the brand of a foreign country can be formed based on a personal visit and media. Although overseas travel had been frequent activity earlier, with the spread of lockdowns due to COVID-19 and the shortage of travel, the process of forming the foreign country perception prevailingly was based on media coverage. Acquiring information about certain issues or events that occurred in another country (Shapiro & Chock, 2004; Wang et al., 2008) and through mediated country identities formed and disseminated by mass media (Luther, 2002; Lou, 2009), people's evaluation of an unfamiliar country has greatly facilitated the formation of a country brand. In this vein, the frame applied by media in coverage of certain country-related topics will contribute greatly to shaping people's view of the country as a whole (Han & Wang, 2015). Thus, people are sensitive to being exposed to disinformation or real news coverage that subsequently serves as a substantial factor in generating the perception of the overall country brand.

Several studies have unveiled the pervasive nature of fake news in comparison with real news. Thus, investigating the speed of falsehood diffusion, Vosoughi et al. (2018, p. 2) determined that "falsehood diffused significantly farther, faster, deeper and more broadly than the truth in all categories of information", and it is humans who spread these types of news rather than bots. The dissemination of fake news more pervasively can be explained by the degree of novelty and the emotional reactions of recipients who may be responsible for the differences observed (Vosoughi et al., 2018). Other researchers show that fake news is emotionally persuasive, and it triggers more emotional consumer responses than truthful news stories (Ekman, 1992) and more high-arousal emotions than candidate new stories (Vosoughi et al., 2018). At the same time, repeated exposure to false information will lead to the perception of the truthfulness of that information, even when the credibility of the source is questionable. Therefore, trust in reputable news organizations will be diminished due to repeated exposure to fake news (Roggeveen and Johar, 2002). Shin et al. (2018) analyzed fake news tweets representing rumors and determined their tendency to reverberate and resurface many times after the initial publication, whereas factual information does not come up repeatedly.

Fake news definition

However, despite the vast majority of studies in the detection process, there are still significant disputes in the determination of whether the content is "fake news" or how to differentiate it from the classical concept of "misinformation" (Lewandowsky et al., 2017; Giglietto et al., 2019). The reason is connected with blurred boundaries of this phenomenon since the level of similarity with other misleading content that has already been investigated in theories of hoaxes, conspiracy, misinformation, and disinformation is not defined (Di Domenico et al., 2021). Additionally, some scrutiny dedicated to "fake news" applies this term interchangeability as either a form of misinformation or disinformation. However, although they both refer to false content, they are two distinct concepts because misinformation refers to unintentionally created false information (Hernon, 1995), whereas disinformation acknowledges the creators' intent to deceive (Jack, 2017).

Instead of addressing fake news and its various forms, including false stories, pictures, reviews, or polls (Berthon & Pitt, 2018), Xichen Zhang and Ali A. Ghorbani have proposed one of the rarest definitions highlighting the main target of any falsehood (2020, p.4), where "fake news refers to all kinds of false stories or news that are mainly published and distributed on the Internet, in order to purposely mislead, befool or lure readers for financial, political or other gains." However, from an economic perspective, the debate on fake news can be reformulated as a debate on quality concerns in news markets. Fake news is defined here as any piece of information that is intentionally and verifiably false or can mislead readers regarding a specific context or brand (Tandoc et al., 2018).

In reviews of the relationship between fake news and brands, Berthon and Pitt (2018) pointed out brands to be the victims of fake news because social media has the ability to strengthen or kill a brand (Kohli et al., 2015), which is especially hazardous in the case of intangible products or services. This is the area that is fully reliant on information continuously generated, shared, and consumed by millions of people worldwide.

Country brand equity

Since the media is a mediator between brand and society, the level of sensitivity and outcome of fake news exposure may vary according to the kind of brands (Anholt, 2007, p. 39), which are private domain brands managed by boards, own private domain brands and public domain brands being nobody's property (Beckett 2000). Public domain brands may include countries, cities, regions, races, demographic groups, and even individual people. As a whole, managing country branding programs is a very challenging issue due to top-down control and the lack of transparency, as countries are complex, multidimensional, and dynamic entities that are governed according to the public interest. Therefore, the consequences of fake news exposure could hit not only the entire country's business but also diplomatic affairs.

Paying attention to the clarification of the plexus between country image and brand, the marketing field distinguishes what an area truly is - "identity", what outsiders think about it - "image", and how the location wants to be known in the outside world - its "brand" or desired reputation (Hospers, 2004). Nevertheless, a country used to produce many products; thus, it possesses several country equities relating to each product category and each market. This makes country brands constitute a multilevel country brand structure (Papadopoulos and Heslop, 2002) where brand equity in this structure has a separate country and product level (Douglas et al., 2001).

The concept of brand equity in juncture with country has been broadened to the construct of country brand equity (CBE) (Zeugner-Roth et al., 2008), identified as the aggregate brand equity of the products from a specific country. According to the brand equity literature, brand equity is a multidimensional construct (Yoo et al., 2000) that is applied to inquiring about consumers' brand evaluation, preferences, and purchase intentions (Christodoulides and de Chernatony, 2010). This construct encompasses several dimensions: awareness, associations, perceived quality, brand loyalty, and other brand assets (Aaker, 1996). However, there are other studies that provide dimensions such as awareness and brand image (Keller, 1993), brand loyalty, perceived quality, and awareness/associations (Yoo and Donthu, 2001; Yoo et al., 2000). In the case of fake news targeted at brands, a key overarching factor in determining response strategy is the degree to which consumers identify with the brand, which can be understood in terms of country loyalty, perceived quality, country association and awareness, and the media frames shaping the overall country brand.

Valence frame theory

The framing process occurs by selecting some aspects and making them more salient in communication texts (Entman, 1993), and it interacts with readers' cognitive structure by "meaning construction" or frame (Pan & Kosicki, 1997). In other words, this fake news framing process can affect people's issue perception and judgment to a certain extent (de Vreese, 2010), including country brands (Han & Wang, 2012). Since people without direct experience rely more on mass media to form images of other countries (Wang et al., 2008; Willnat, et al., 2000), many studies contend that valence framing has a significant influence on people's perception, judgment, and decision-making in various subfields of communication (Chang, 2008; Schuck & de Vreese, 2006; Wang, 2007).

The essence of valenced media frames lies in opposite evaluations about virtually similar issues or subjects (love vs. hate; favor vs. disfavor). In other words, valenced news frames reflect variations ranging from good and positive to bad and negative aspects. Scientists de Vreese and Boomgaarden (2003) claim that valence framing bearing negative or positive attributes of a similar object tends to guide readers' thoughts in opposite directions, which supposedly would be more substantial in the case of fake news wielding pervasive nature (Vosoughi et al., 2018). This occurs because information depending on the (positive or negative) frame is encoded differently relative to its descriptive valence (Levin et al., 1988; Levin, et al., 1998).

Addressing the statement that the valence of news frames can affect both cognitive responses (Shah et al., 2004) and attitudes (Schuck & de Vreese, 2009), this theory suggests an appropriate theoretical framework to evaluate fake news exposure on country brand equity because it is obvious that while some frames contain few implicit evaluations, fake news frames carry more (Chong and Druckman, 2007) due to emotional persuasiveness (Ekman, 1992). This may arise from the nature of thoughts or opinions shaping attitudes toward foreign country brands (Han et al., 2009).

Therefore, since people's perceptions of other countries can be altered by the affective nature (valence) of media coverage (Manheim and Albritton, 1984, 1994), the current study applies positive and negative valenced fake news frames to assess the direct framing effect on country brand equity, which is operationally defined as a perception of certain counry.

Although there is no direct deep exploration of the relationship between news or fake news and country brand equity dimensions, according to the applicability effect (Cacciatore et al., 2016; Price & Tewksbury, 1997; Price et al., 1997), biased encoding leads to the activation of positive or negative valenced knowledge being applied in subsequent estimation. In other words, positive frames induce auspicious association leading to positive estimation rather than negative one and vice versa. This phenomenon is called the "valence-consistent' shift" (Levin et al., 1998, p. 160), where negative frames cannot produce more favorable evaluations than positive frames, which presents the clearest evidence of a homogeneous phenomenon – positive and negative frames produce predominantly positive and negative associations, respectively.

Therefore, based on the theoretical rationale, the first two hypotheses address the direct framing effect on participants' perception of country.

H1: Exposure to negatively valenced fake news frames negatively affects attitudes toward country brand awareness (**a**), brand association (**b**), brand quality (**c**), brand loyalty (**d**).

However,

H2: Exposure to positively valenced fake news frames positively affects attitudes toward country brand awareness (**a**), brand association (**b**), brand quality (**c**), brand loyalty (**d**).

Based on a vast number of studies, there is a claim that negative and positive information is not asymmetric (Kahneman & Tversky, 1979), where negative information acquires stronger exposure on people's attitudes than positive information (Peeters & Czapinski, 1990; Baumeister et al., 2001; Luo, 2009). Studies devoted to negative bias reflect greater exposure on attitudes and cognition (Rozin et al., 2001) and on judgments and decisions (Kahneman et al., 2000), and negative information is more salient and more memorable (Johnson-Cartee & Copeland, 1991; Lau, 1985), and those con arguments are more persuasive than pro arguments (Cobb & Kuklinski, 1997).

Supporting studies on the superiority of the negativity effect (Chevalier & Mayzlin 2003; Mittal et al., 1998), this study expects that negatively valenced fake news has a higher frame effect on judgment.

H3: The impact of negatively valenced fake news is stronger than the impact of positively valenced fake news on country brand awareness (a), brand association (b), brand quality (c), brand loyalty (d).

In this respect, valence framing can provide a theoretical perspective for understanding the influence of fake news on perceptions of and attitudes toward a country brand equity that, in turn, may cointegrate with the level of credibility – the degree of belief attributed to fake news (Wathen & Burkell, 2002).

News credibility

Applying news credibility to fake news, the concept of message credibility has been borrowed from the communication area, where it is defined as the believability of some information (Hovland et al., 1953) assisting in shaping the judgments of recipients (Oyedeji, 2010).

Taking into account only credible information by the reader generates a substantial role of information credibility in every field (Gräfe & Maaß, 2015, p. 173), especially in the

areas acquiring the intangible nature of the product (which offers very limited physical cues for evaluation) and the economic and psychological risks associated with decision-making (Loda et al., 2009). As Flanagin and Metzger (2000) have shown, news is rated as more credible than any other media content, especially advertisements. Comparing different news channels, Kiousis (2001) found that regardless of the media outlet, 85 to 92 percent of the respondents rated news as moderately or even highly credible.

Thus, credibility is an essential quality of news that influences readers' subsequent behavior. Believability can be a critical determinant of social media usage because when someone believes the information to be correct, they are more likely to engage with it or encourage its spread by sharing it themselves (Johnson & Kaye, 2015). Studies on news perceptions have shown that believability affects a variety of social media activities, including reading, liking, commenting, and sharing (Kim & Dennis, 2019; Kim et al., 2019; Moravec et al., 2019).

The vast majority of studies devoted to credibility and its impact on attitude have been undertaken in the marketing field, where the importance of information expertise and trustworthiness were identified as crucial factors in distinguishing attitudes and informational acceptance (Pornpitakpan, 2004; Cheung et al., 2008; Jin et al., 2009). For instance, some studies have depicted credibility as having a positive influence on attitude change (Ohanian, 1990), and a positive relationship has been found between source credibility and information usefulness (Jin et al., 2009) and between source credibility factors and intention to purchase (Ohanian, 1991; Cronin and Taylor, 1992).

Due to the empirically proven direct relationship between credibility factors and attitude (Jin et al., 2009) or intention to purchase (Ohanian, 1991; Cronin & Taylor, 1992), there are some studies dedicated to building associations between positive/negative frames and trustworthy/untrustworthy information.

According to described models of (equivalence) framing effects (Levin et al., 1998; Price & Tewksbury, 1997), negative frames temporarily activate knowledge of negativity and associated constructs (such as high credibility), while positive frames increase the activation of positivity and associated constructs (such as low credibility) (Nelson, Oxley, and Clawson, 1997; Price, et al., 1997). In this vein, two studies have addressed this research gap from a psychological perspective. Hilbig (2009, 2012a) presented participants with positively and negatively framed statements and asked them to indicate whether they believed each one was true or false. Negatively framed statements, such as the statement that "20% of all marriages end in divorce within the first 10 years," received higher truth ratings than the equivalent positively framed statement that "80% of marriages last 10 years or longer" (Hilbig, 2009).

Therefore, based on the theoretical rationale, our current study claims that

H4: Negatively framed fake news has a higher effect on news credibility than positively framed fake news.

In addition, we assume credibility depicts a mediating role where individuals with higher level trust affect country brand equity more strongly.

H5: Credibility will mediate the relationships between valenced fake news frames and country brand equity.

According to the majority of studies, country image is also identified to play mediating effects on consumer intentions by directly affecting perceptions of products and brands

(Pharr, 2005). In this vein, Peterson, Jolibert (1995) and Pharr (2005) suggest the need to study conative and cognitive effects of country image separately, considering the hierarchical ordering of consumer responses to country of origin. Therefore, this study distinguishes between cognitive and affective country image, applying only cognitive image (Gartner, 1993) due to the claim that the framing process interacts with readers' cognitive structure by "meaning construction" or frame (Pan & Kosicki, 1997). Therefore, assume that:

H6: Cognitive image mediates the relationship between valenced fake news frames and country brand equity.

H7: Credibility and cognitive image will sequentially mediate the relationship between valenced fake news frames and country brand equity.

Figure 1 presents the hypothetical framework of this study.

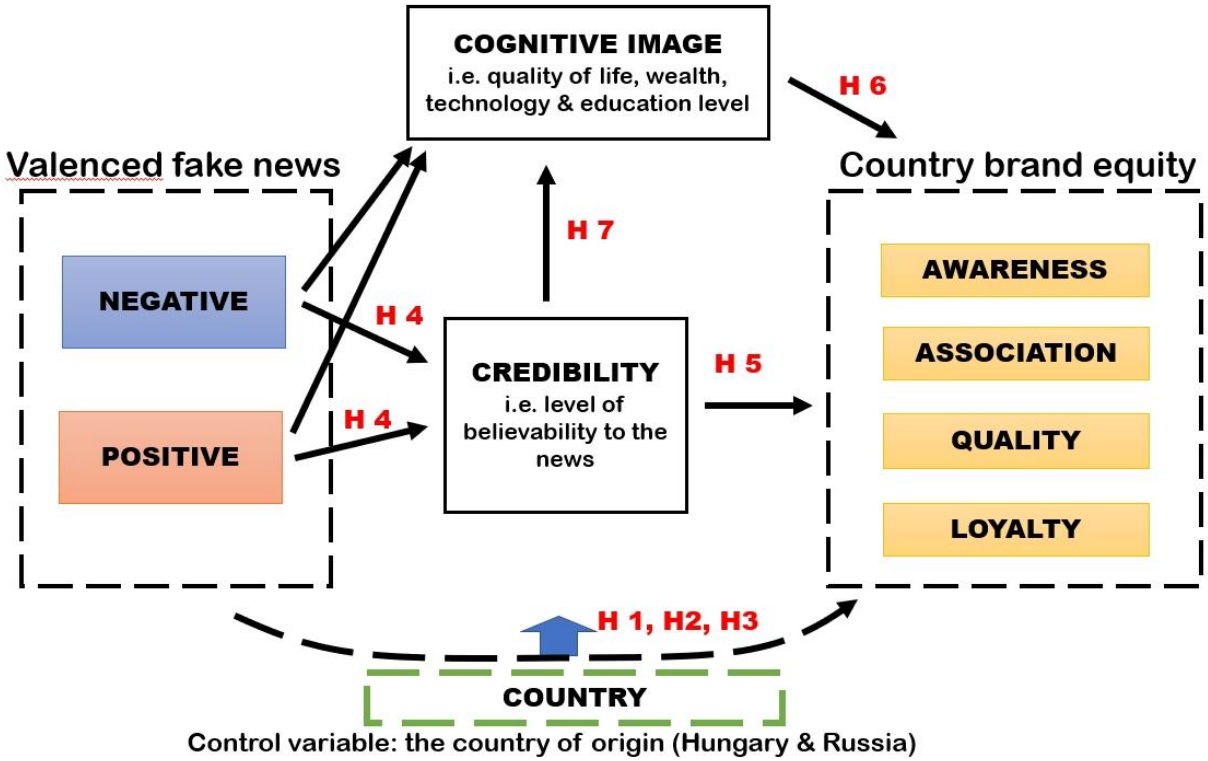

Figure 1. Hypothetical Framework

Source: Authors' own research.

Method

Design

This study applies perceived and projected approaches to analyze the contribution of fake news to country image from a methodological point of view. It attempts to fill a niche by investigating the country brand perception by consumers before reading fake news, the perceived image of a country brand after reading it, and its impact on country brand equity dimensions. In other words, if projected images by fake news are evaluated as an acute influence on changes in country perceived image and how it is, in turn, related to country awareness, associations, quality, and loyalty (Boo, Busser, & Baloglu, 2009).

China was selected to be the country of evaluation of the deviations in consumers' perceptions toward brand equity because, according to data, views of China have grown more negative in recent years across many advanced economies (Silver et al., 2020) due to COVID-19 events and the strong exacerbation of fake news cointegrating China as a place of this disease birth.

The respondents were chosen to be students from Russia and Hungary for several reasons. First, their destination proximity to China creates difficulties for respondents to gain the real experience from this country (Dávid et al., 2003), and as a result, they should rely solely on information read from news. The one that is closer (Russia) and further (Hungary) to it and one of the leading countries in Europe developing close relations with China. Second, students are chosen to be respondents based on the fact that they have the same age and education level that make it possible for them to read trustworthy and disinformation online in various social media. Therefore, 290 Russian students from different programs in Russian universities around Russia and 132 Hungarian students took part in the first survey with negative fake news. In the second survey with positive fake news, the respondents were 224 Russian students of different programs from Russian universities around Russia and 256 Hungarian students. They were students of Bachelor and Master programs, who mainly have not been to China, which strengthens the fact that they can only rely on information from news but not previous experience.

Two online surveys (positive and negative surveys) were developed and launched separately in December 2021 to determine perceptions about the country brand of China. The questionnaire incorporates four sections. In the first section, respondents were asked to provide personal knowledge about the country, their experience, gender, and age. In the second part, the perceived image of the respondent was evaluated based on concepts of cognitive and affective country image and country brand equity dimensions, country awareness, associations, quality, and loyalty, which were assessed with the help of a 7-point scale. In the third section, respondents were given valenced fake news messages bearing negative or positive connotations about China, its people, and its product.

To measure the perceived truth – credibility variable, in the statistical fake news, participants were asked after reading each fake news item to indicate to what extent they think the content of this news to be true or false (previously used by Koch & Peter, 2017). Respondents answered on 7-point scales (Ahluwalia & Gurhan-Canli, 2000; Simonin & Ruth, 1998) ranging from 1 = news is not true at all to 7 = completely true.

Finally, participants proceeded to the fourth section, where their projected image after reading fake news was assessed based on the same scale provided by Boo, Busser, & Baloglu (2009) but in random order with the help of the 7-point scale.

Measurement scales

The scales of country brand equity (Table 1) were adapted from previous studies to ensure content validity: the scale for measuring country brand loyalty was developed according to Boo et al. (2009) and Konecnik & Gartner (2007), whereas perceived association was developed according to Yoo & Donthu (2001). Country brand awareness and perceived country brand quality were measured through scales based on the works of Boo et al. (2009) and Konecnik & Gartner (2007). All of them were adapted to the specific field of travel as China brand equity. Cognitive country image was adopted from Orbaiz and Papadopoulos (2003) and Nadeau et al. (2008).

Table 1. Scales applied in the research

Brand equity dimensions	Sort Abriviation
Brand awareness	
China has a good name and reputation	BA1
When I am thinking of an international holiday, China comes to my mind immediately	BA2
Characteristics of China come to my mind quickly	BA3
Perceived quality	
High-quality accommodation	PQ1
High levels of cleanliness	PQ2
High level of personal safety	PQ3
High-quality infrastructure	PQ4
Perceived association	
China fits my personality	PA1
My friends would think highly of me if I visited China	PA2
The image of China is consistent with my self-image	PA3
Perceived loyalty	
China would be my preferred choice for a vacation	PL1
I would advise other people to visit China	PL2
I intend to visit China in the future	PL3
Cognitive country image	
Quality of life	
Wealth	
Technology level	
Education level	

Source: Authors' own research.

Stimulus materials

Fake news was selected for the experimental and control conditions. Two conditions were included in the design. One represented a negative frame, and the other a positive frame. The original fake news articles were selected from the fact-checking database of the website Snoops.com, which had already been checked and identified as fake news – totally created news.

To measure framing effects, 19 negative and 19 positive fake news items on societal issues about China were determined, the titles of which are represented in Table 2 and Table 3. All fake news was translated into Hungarian and Russian languages by native speakers to avoid the problem of respondents' misunderstanding due to language barriers.

To clarify how positive or negative they are, we first relied on the definition of these types, where negative news is "those items that report social conflicts and disorganization," including stories involving international tension, civic disruption, crime and vice, and accidents and disasters (Gieber, 1955, pp. 311-312), whereas positive news stories are "one for which the majority of the local paper's readers would be satisfied or pleased that the event had happened or happened as it did. The tone of the story will be generally positive or upbeat" (Hartung and Stone, 1980, p. 21).

To check our assumption, we manipulated sentiment analysis by applying MeaningCloud software. It is an online sentiment analysis tool supporting most European languages, namely, English, Spanish, French, Italian, etc. It supports the extraction of sentiment at a document or aspect-based level. This tool also has the feature of feeding user-defined dictionaries and models for performing analysis. This analyzer provided us with the following data per article, which are presented in Table 1 and Table 2.

SCORE: The sentiment score that can be one of the following values: none (no sentiment), N+ (very negative), N (negative), neutral, P (positive), P+ (very positive).

Table 2. Results of sentiment analysis of chosen fake news items with negative connotations

Article title	Polarity
1. DHS Report: China Hides an appearance of new Virus' Severity to Hoard Supplies	N
2. Is China Building a hospital in 10 Days to Treat new stamp Coronavirus Patients?	N
3. 'Corrupt' Politicians are going to be executed in China	N
4. Chinese Restaurants Granted Permission to Sell Dog Meat	N+
5. Teriyaki sauce in couple years will be made from hairs in China	N
6. Is China Seeking Approval to Kill 20,000 Coronavirus Patients since 2023?	N+
7. Have Health Experts 'Predicted' New Coronavirus Could Kill 65 Million People 2023?	N+
8. Hong Kong Shop will offer 'Tear Gas' Flavor Ice Cream in mass production by 2024	N
9. Is China Genetically Engineering 'Super Soldiers'?	N
10. Activists are skeptical and concerned about reports of China's "emotion monitoring" technology implementation by 2030.	N
11. Will China's Three Gorges Dam Slow Rotation of Earth by 2035?	N
12. Will Clone Monkeys by Chinese scientists will bring new types of viruses by 2035?	N
13. Driven to Kill: Why Drivers in China Intentionally Kill the Pedestrians They Hit	N+
14. Cat in Chinese Food	N+
15. Was Charles Lieber Arrested for Selling the COVID-19 Coronavirus to China?	N
16. No, China Isn't Amassing Troops in Canada To Invade the US	N
17. Are People Collapsing in the Street from Coronavirus?	N
18. Are Crabs Imported from China Injected with Formalin?	N+
19. CDC Warns Hair Bands from China Made of Used Condoms	N

Source: Authors' own research.

Table 3. Results of sentiment analysis of chosen fake news items with negative connotations

Article title	Polarity
1. "Communist China" will have been an owner of DreamWorks by 2023	P
2. Pandas in China will Devour Ice Cake to Celebrate 50 Years at National Zoo	P
3. Space Junk on 5,800-MPH Collision Course with Moon will be prevented by Chinese rocket	P
4 Will China's 'Panda Bear Solar Farm' be launched?	P
5. China will have Launched an Artificial Sun by 2030?	P
6. 2030 model Chinese Aircraft Carrier	P
7. How China will Get Blue Skies	P
8. Are Robots Ballroom Dancing at Shanghai Disneyland?	P
9. Will the Great Wall of China become Visible from the Moon?	P
10. Will a Pagoda Flower be used in treatment of cancer That Only Blooms Once Every 400 Years?	P
11. Will Garlic Water Cure Coronavirus?	P
12. China is going to prohibit animal Testing Conducted by cosmetics companies by 2030?	P
13. Chinese government provide a $3.7 Million Grant to laboratories worldwide?	P
14. Are Chinese children the most talented in playing Ping-Pong?	P
15. Did Corona Beer Sales Increased Sharply in China Due to cure the Coronavirus?	P
16. China Halts Work by Team on Gene-Edited Babies	P
17. Was a Chinese Miner Found Alive After 17 Years Underground?	P
18. Do Thousands of People in China Witness a Floating City Mirage regularly?	P
19. Ice Cream Treating COVID-19 have appeared in China?	P

Source: Authors' own research.

Analysis

Paired sample T test analysis was used to assess valenced fake news frame effects on dimensions of country brand equity. To assess the mediation effects, a test was conducted

using model 6, the PROCESS macro (v3.5) in SPSS 27 software with the bootstrap sampling method (sample size = 5,000), as recommended by Hayes (2013). Bootstrap sampling was used to generate asymmetric confidence intervals (CIs) for the mediating effects. Additionally, the present study used confirmatory factor analysis (CFA) to assess the measurement model, and the validation of the data was confirmed by Cronbach's alpha, common method variance tests and descriptive statistics.

Results

The total number of respondents in positive fake news is 475, encompassing 257 Hungarian students (49% female and 51% male) and 218 Russian students (51% female and 49% male). Hungarian students are mainly located in Budapest; however, the students of Russian universities include various geographical locations since the country is large. It is interesting to note that 93% of Russian respondents and 98% of Hungarian respondents had never been to China. Concerning the characteristics of respondents for the negative fake news survey, the total number constitutes 414 participants, of which 280 Russian respondents are 78% female and 22% male, whereas Hungarian participants encompass 134 with 82% female and 18% male. Most of them had never been to China (91% of Russian respondents, 98% of Hungarian students).

Reliability of the measurement model of the research framework

Before testing the research hypotheses, to control the dimensionality and reliability of the measurement model of the research framework, confirmatory factor analysis (CFA) was applied.

According to the results presented in Table 3, which depicts the characteristics of the measured items, all scales are allowed to correlate freely. Each item had a standardized loading of 0.6 or greater than it and a high level of significance ($p<0.001$).

Table 4. Item factor loadings and fitness assessment of the measurement model

Item	Loading	Chi-square	RMSEA	SRMR	CFI	RFI	NFI	TLI
BA 1	0.768***	172,597/53	.057	.035	.978	.960	.971	.970
BA 2	0,881***	= 3,2						
BA 3	0,700***							
PQ 1	0,819***							
PQ 2	0,695***							
PQ 3	0,748***							
PQ 4	0,621***							
PA 1	0.814***							
PA 2	0.819***							
PA 3	0,844***							
PL 1	0.873***							
PL 2	0.908***							
PL 3	0.729***							

Source: Authors' own research.

In the same vein, Table 4 depicts various fitness indicators from CFA, which are the outcomes of the computed scales. Since each indicator has satisfied the recommended threshold in the literature, it can be claimed that the measurement model fits the survey data reasonably well, indicating validity (Hair et al. 2014; Ahmad et al. 2016).

To assess the severity level of the common method variance test from the survey data, the Harman single-factor test (Podsakof et al., 2003) was applied. It turned out that the one and only factor in an exploratory factor analysis (EFA) explained 44.9% of the total variance, less than the severity threshold of 50% in the literature that confirms that CMV was not a serious problem in the survey data.

According to the results provided, Table 5 depicts items with mean, StD deviation, and Cronbach's alpha value.

Table 5. Country brand equity scales

Scale items	Mean	StD Dev	Cronbach Alpha
Brand awareness			
BA1	4,23	1,69	0,701
BA2	2,11	1,56	
BA3	2,27	1,68	
Perceived quality			
PQ1	3,99	1,37	0,807
PQ2	3,81	1,7	
PQ3	3,96	1,53	
PQ4	5,18	1,34	
Perceived association			
PA1	2,29	1,56	0,818
PA2	3,75	1,98	
PA3	2,30	1,68	
Perceived loyalty			
PL1	2,05	1,55	0,781
PL2	3,66	1,88	
PL3	4,47	1,96	
OVERALL			0,901

Source: Authors' own research.

The overall reliability of the scale is excellent (a = 0,901), and all 4 dimensions, brand awareness (a = 0,701), perceived quality (a = 0,807), perceived association (a = 0,818), and perceived loyalty (a = 0,781), have satisfactory reliability. Thus, the internal consistency reliability meets the standard (Bagozzi and Yi, 1988).

Since each dimension includes several scales, it would be difficult to elicit significant differences per dimension. Therefore, a further step in identifying the real exposure of fake news on country brand equity was the computation of the average score per dimension of country brand equity. The means, Std deviation and interrelations of the composite variables are presented in Table 6.

Table 6. The means, standard deviation and interrelations of the composite variables

Composite variable	Mean	StD Dev	1	2	3
Brand awareness (avg)	3,28	1,14	1		
Perceived quality (avg)	4,23	1,18	,502**	1	
Perceived association (avg)	2,77	1,50	,742**	,460**	1
Perceived loyalty (avg)	3,39	1,51	,733**	,381**	,784**

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Authors' own research.

Valenced fake news frames and country brand equity

Hypothesis 1 predicts that a negative valenced fake news frame will have a direct and negative influence on country brand equity dimensions, which will be checked by applying the average score per dimension in a paired sample t test. The results of table 7 come from which the means were compared, and significance was presented.

Table 7. Results of paired sample t test concerning negative fake news based on Hungarian and Russian respondents' perceptions

		Mean	Std. Deviation	Sig
Brand Awareness of the Country	Before reading	3,4263	1,23835	
	After reading	3,2403	1,19422	<,001
Perceived Quality of the Country	Before reading	4,2434	1,22927	
	After reading	4,0598	1,22182	<,001
Perceived Association of the Country	Before reading	2,9372	1,47724	
	After reading	2,6795	1,52597	<,001
Perceived Loyalty of the Country	Before reading	3,6111	1,66013	
	After reading	3,5443	1,54473	<,001

Source: Authors' own research.

The results show considerable differences in all dimensions of country brand equity concerning the country brand, as the significance level is lower than 0,05. Thus, paying attention to the means of each dimension that decreased after reading negative fake news, it could be concluded that the opinions of respondents were noticeably transformed negatively in all country brand equity dimensions.

The results indicated that negative fake news has an impact on country brands, although it is changed negatively. Therefore, hypotheses 1a, 1b, 1c, and 1d were supported.

Hypotheses H2a, H2b, H2c, and H2d predict that positive fake news produces a positive impact on country brand dimensions. To test this hypothesis, the computation of the average score per dimension was again applied, and a paired sample t test was performed (Table 8).

Table 8. Results of paired sample t test concerning positive fake news based on Hungarian and Russian respondents' perceptions

		Mean	Std. Deviation	Sig
Brand Awareness of the Country	Before reading	3,1535	1,17996	
	After reading	3,1563	1,08348	0,933
Perceived Quality of the Country	Before reading	4,2247	1,21754	
	After reading	4,1711	1,16205	0,139
Perceived Association of the Country	Before reading	2,6421	1,45677	
	After reading	2,5986	1,46153	0,259
Perceived Loyalty of the Country	Before reading	3,2049	1,53075	
	After reading	3,2540	1,45575	0,168

Source: Authors' own research.

Although the means before and after reading fake news frames changed, the results do not reflect considerable impact in all dimensions due to the significance level, which is higher than 0,05. Therefore, hypotheses 2a, 2b, 2c, and 2d were not supported.

To support hypothesis 3, a one-way ANOVA based on DELTA values (Table 9) was conducted for the two content manipulations of fake news to examine the effect of negative and positive fake news. To calculate the DELTAs, the following equation was applied where the mean of data reflecting the perception before reading fake news and the mean of data obtained after reading fake news both negative and positive were deployed.

DELTA = Mean (dimension X before reading) – Mean (dimension X after reading)

Table 9. Results concerning positive and negative fake news impact

DESCRITIVES				**ANOVA results**
		Mean	Std. Deviation	Sig
Change of Brand Awareness	Negative news	0,1860	0,66757	<,001
	Positive news	-0,0028	0,72409	
Change of Perceived Quality	Negative news	0,1836	0,79921	0,015
	Positive news	0,0537	0,78891	
Change of Perceived Association	Negative news	0,2576	0,71131	<,001
	Positive news	0,0435	0,83858	
Change of Perceived Loyalty	Negative news	0,0668	0,79350	0,028
	Positive news	-0,0491	0,77491	

Source: Authors' own research.

When analyzing both scenarios of fake news impact, the ANOVA demonstrates a significant difference between all dimensions, therefore reflecting the strong exposure of valenced fake news frames on these dimensions. However, paying attention to the mean, negative news used to be higher than positive news in each dimension. For instance, brand awareness of the country where the mean of negative news (0,1860) is higher than positive ones (-0,0028) and perceived association of the country with the mean of negative news (0,2576) higher than positive ones (0,0435), etc. The same pattern is observed in perceived quality of the country and perceived loyalty to the country, as the significances are lower than 0.05.

However, to calculate the effect sizes of negative and positive fake news with changes in country brand equity dimension variables, such as brand awareness, perceived quality, association, and loyalty, we use Cohen's d as an effect size metric. An effect size of 0.20 is classified as "small," 0.50 as "medium," and 0.80 as "large" (Cohen 1988, pp. 24). The results reveal that negative news has a small effect size on brand awareness (d = 0.27) and perceived association (d = 0.27) and almost no effect on perceived quality (d = 0.164) and loyalty (d= 0.148).

These findings indicate that negative fake news generates a greater amount of cognitive processing in consumers' perceptions and that negative disinformation is more influential on people's minds than positive disinformation; however, a small effect size exists only in the case of brand awareness (d = 0.27) and perceived association (d = 0.27) changes. Thus, it can be inferred that hypotheses H3a and H3b are confirmed, whereas H3c and H3d are not.

Valenced fake news frames and credibility

Paying attention to the relationship of valenced fake news frames and news credibility, as the first step ANOVA test was applied to evaluate if the impact of fake news type (pos or neg) correlates with credibility significantly.

The results presented in Table 10 show that the level of credibility is significantly influenced by the type of valenced fake news frame, where a mean of 3,82 positive frames being higher than negative frames depicts a higher belief in positive fake news rather than negative fake news, as the mean is lower - 3,53.

Table 10. ANOVA test results for the correlation of valenced fake news frames with credibility

Descritives			**ANOVA results**
	Mean	Std. Deviation	Sig
Negative valenced fake news frames	3,53	0,82	<,001
Positive valenced fake news frames	3,82	0,84	

Source: Authors' own research.

To calculate the effect sizes of negative and positive fake news with credibility, we use Cohen's d (Cohen 1988, pp. 24) as an effect size metric as well. The effect size is d = -0.35, where the negative sign shows that the first group, which is negatively valenced fake news frames, has a lower mean, which tells us the direction; therefore, positively valenced fake news frames have a higher effect on credibility than negatively valenced fake news frames and are classified as "small". Based on the results in Table 9, we see that credibility differs significantly based on positive and negative valenced fake news, and the mean, which is higher in the case of positive news, depicts that people believe positive news more than negative news. That means that hypothesis 4 is not confirmed.

To take a deep look at how credibility relates to valence and country, we conducted two-way ANOVA to check the interaction between valenced fake news frames and the country. There was sufficient evidence to reject the interaction effect null hypothesis based on the output depicting a significant interaction effect $F(1, 884) = 5,026$, $p = 0,025$, partial eta squared = 0,006, observed power = 0,61. This means that the effect of valenced fake news frames on credibility depends on the country.

Mediating hypothesis

To estimate the mediation effects, a test was conducted using the PROCESS macro (v3.5) in SPSS 27 software with the bootstrap sampling method (sample size = 5,000), as recommended by Hayes [122]. Bootstrap sampling was used to generate asymmetric confidence intervals (CIs) for the mediating effects.

For a formal test of the hypotheses, we conducted a mediation analysis according to Hayes (2013) using model 6 of the PROCESS tool, with valence as the independent variable, cognitive image and credibility as mediators, CBE as the dependent variable, and country (Hungary and Russia) as covariates which is a constant adjuster. Because the covariate country is related to the dependent variable it reduces unexplained variability in the dependent variable.

The outcome reflects a significant positive effect of valence on credibility (b = 0.3605, t (885) = 6.22, p<0.001) and a significant effect on cognitive image (b = - 0.14, t(884) = - 2.32, p = 0.0206). However, credibility has a positive effect on cognitive image (b = 0.18, t(884) = 4.747, p<0.001).

Bootstrapping analysis showed in Figure 2 that the indirect effect valence on country brand equity through credibility is statistically significant (R-sq = 0,0626, b = 0,06, SE = 0.02, 95% BCa CI [0.03, 0.108], supporting H5.

Cognitive image mediates the relationship between valence and country brand equity (R-sq = 0,143, b = - 0.07, SE = 0.03 95% BCa CI [- 0.14, - 0.011]), supporting H6. Finally, credibility and cognitive image sequentially mediate the relationship between valence and country brand equity (R-sq = 0,33, b = 0.03, SE = 0.01 95% BCa CI [0.017, 0.06]), which supports H7.

The small value R-sq in the case of a direct effect through credibility interprets the existence of other variables taking part in this variation. The improvement in the value of R-sq in the case of credibility and cognitive image sequential mediation reflects that variation in the value of country brand equity is more appropriately defined by including 2 mediating and independent variables. Approximately 33% of the variation in country brand equity is now represented by valenced fake news frames, credibility, and cognitive image.

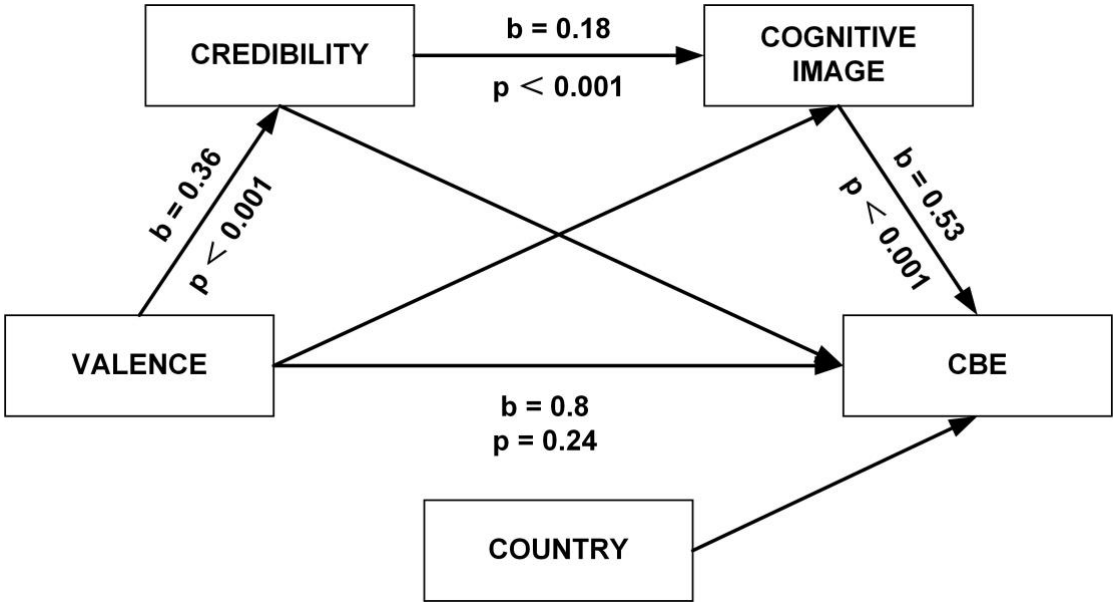

Figure 2. The standardized coefficients for the indirect relationships between valenced fake news and country brand equity through credibility and cognitive image based on data attained from Hungarian and Russian respondents.

Notes: Total effect, b = 0.12, SE = 0.077, p = 0.106; Direct effect, b = 0.084, SE = 0.0705, p = 0.235; Total indirect effect, b = 0.04, SE = 0.04, 95% BCa CI [- 0.04, 0.12]; Indirect effect through credibility, b = 0.08, SE = 0.02, 95% BCa CI [0.04, 0.13]; Indirect effect through cognitive image, b = - 0.07, SE = 0.03 95% BCa CI [- 0.14, - 0.011]; Indirect effect through credibility and cognitive image, b = 0.03, SE = 0.01 95% BCa CI [0.017, 0.06].

Source: Authors' own research.

Discussion

Differences from previous research

Through this study, we respond to the call of Di Domenico et al. (2020) for more empirical studies to assess to what extent falsehood information can tarnish the brand reputation and if prior beliefs, attitudes, and news credibility moderate/mediate the relationship between fake news and brand attitudes.

The scope of valenced news frames has long been theorized as a framework to evaluate news impact on people's issue perception and judgment to a certain extent (Price et al., 1997; de Vreese, 2004), including country brands (Han & Wang, 2012). We pioneer in empirically investigating this theory in the country brand literature, as according to previous studies, the influence of valenced news frames is significant in the formation of the overall national image (Gang et al., 2015).

As a contribution, we endorse the application of valenced frames theory in the fake news domain and have proposed an integrated model to examine the direct and indirect effects of valenced fake news frames on country brand equity through the cognitive country image, which is in its infancy in brand management. Connecting valenced news theory applied in fake news and country brand equity in this study aims to estimate the extent of tarnishing country brands and clarify various features of this impact in the case of positive or negative frames.

Main findings

The empirical results portrayed that negative fake news frames can affect all dimensions of country brand equity negatively, whereas positive fake news frames do not change people's perceptions significantly. This finding can be supported by literature where the affective nature (valence) of media coverage alters people's perceptions of other countries Manheim and Albritton (1984) and significantly influences people's perception, judgment, and decision-making (Chang, 2008; Wang, 2007). The results also depicted that negative valenced fake news frames generate more cognitive processing in consumers' perceptions and that negative disinformation is more influential on people's minds than positive disinformation; however, producing merely a small effect size only in the case of brand awareness, perceived association changes. This is in line with the existing "'valence-consistent' shift" phenomenon (Levin, Schneider, and Gaeth, 1998, p. 160), where negative frames cannot produce more favorable evaluations than positive frames.

Another contribution made by this study is the role of news credibility in the relationship between valenced fake news frames and country brand equity and the identification of some features in this process, which finds theoretical support in the works of Sharif et al. (2022). We provided empirical support for available theoretical claims building associations between positive/negative frames and trustworthy/untrustworthy information (Levin, Schneider, and Gaeth, 1998; Price and Tewksbury, 1997) by applying it in the fake news domain. According to outcomes, we proved that the level of credibility is significantly influenced by the type of valenced fake news frame, where the credibility is higher in the case of positive fake news frames rather than negative ones, meaning that people believe positive news more. We also added evidence that the effect of valenced fake news frames on credibility depends on the country.

The major theoretical argument of this study is the mediating role of credibility and cognitive country image in constructing an overall model of valenced fake news frame

exposure on country brand equity. Previous scholarship has not yet given adequate attention to the relationship between these two constructs. The idea of involving credibility and cognitive image partially supports the fact that they are identified to play mediating effects on consumer intentions by directly affecting perceptions of products and brands (Pharr, 2005). According to the output produced with bootstrapping analysis, there is no direct effect between valenced fake news frames and country brand equity. However, there is a significant indirect effect through credibility and cognitive image, which is stronger in the case of sequential mediation.

From a managerial perspective, the results have significant implications for marketing activities. The findings clarify the trait of exposure to fake news frames on country brands and its produced consequences. These findings will contribute to the development of an anti-crisis communication strategy for a country and, therefore, to decreasing the consequences followed after worsening international consumers' perception of keeping the economic and sociocultural richness of the country stable. First, country brand managers should be aware of the impact of valenced fake news frames on the dimensions of CBE. Specifically, positive valenced fake news frames will not affect CBE in comparison with negative frames, which acquire more impact. Second, this type of impact does not proceed directly on CBE but through credibility and cognitive country image, which consumers possess based on their country of living. Therefore, brand managers should define their internationalization strategies based on an in-depth analysis of the existing cognitive image to maintain strong and stable international consumers' thoughts, feelings, perceptions, etc. It would assist in decreasing the destructive nature of exposure but apply the intensive spread of fake news devoted to the country as a tool of increasing customer attention to the country brand.

Limitations and future research

The fact that this research focuses on a specific country (China) could limit the generalization of the results. According to the Nation Brand Index 2020 ranking, China takes 2nd place, following the USA, and the strength of the brand may protect the actual consequences that occurred after the fake news impact. Thus, a country with a weaker brand may substantially affect country brand equity. The replication of the study in other countries with different characteristics and images would contribute more. In any case, China is considered to be a good benchmark for such a pioneering study since it happened precisely during the COVID-19 period, which was marked as a period of intensive fake news spreading. Therefore, our approach of testing the impact of fake news on Chinese brand equity suggests that the results may be stable and applicable to other environments. On the other hand, different sample and target country combinations may produce different results.

Concerning the limitations of this scrutiny, it is worth mentioning the limited number of dependent variables represented only in credibility and cognitive image. However, there are a number of significant indicators that could be applied and evolve theoretical ground, for instance, message comprehension, knowledge gain, and recall. Another limitation is that a short-term effect was evaluated in this study. Respondents had approximately 20 news items, after which the dimensions for country brand equity were measured. However, the results of long-term effects, for instance, during a month or half of the year, may vary significantly because the effect could be constant and prolonged.

Finally, the sample only involves Russian and Hungarian respondents. This is a limitation of the study; the results obtained from the respondents of the farther countries could show some more characteristics and volume of fake news influence.

Conclusion

The findings of this research have considerable theoretical implications because they represent an appropriate step in advancing knowledge about fake news frames and their effect on country brand equity. First, no previous studies have analyzed the relationships between fake news frames and CBE dimensions. In this regard, the present research confirms the existence of a hierarchy of effects between fake news and the different dimensions of CBE; nevertheless, it is an indirect effect through credibility and cognitive image. Accordingly, the comprehension of the effect of fake news on consumer behavior requires considering the relations with country brand awareness, association, perceived quality, and loyalty. Second, this study confirms the impact of disinformation bearing negatively valenced frames; however, the positive effect is not significant even though credibility is higher in comparison with negatively framed fake news, and the effect of valenced fake news frames on credibility depends on the country. Therefore, this research reveals some characteristics of how the spread of disinformation concerning the country affects consumers' brand perception through its influence on brand equity dimensions.

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